

Section 8-5: Infinite Series

Complete the In-Class Activity on page 515 with a partner. Record your answers below. Discuss your findings with another group.

1. a.

b.

c.

2.

3.

The sum S_{∞} :

Convergent and Divergent:

Example 1: Consider the infinite geometric series $1 + .99 + .99^2 + .99^3 + \dots + .99^{n-1} + \dots$.

a. Find the first five partial sums.

b. Does the sequence of partial sums seem to converge? If so, what is the values of the series?

Example 2: Refer to question 17 from section 8-4, where a Superball is dropped from a height of 10 ft and it bounced back to three quarters of its previous height. How much distance will the Superball traverse before it comes to rest?

Theorem (Whether a Geometric Series Converges or not...):

Example 3: The infinite series $1 + \frac{2}{1!} + \frac{4}{2!} + \frac{8}{3!} + \dots + \frac{2^n}{n!} + \dots$ converges. Use a calculator to approximate the limit to six decimal places.

Homework:

**"WE FORFEIT THREE-FOURTHS OF OURSELVES IN ORDER TO BE LIKE
OTHER PEOPLE." — ARTHUR SCHOPENHAUER**